

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A measurement device for determining gas flow through a conduit, said device comprising:

a vane arrangement extending into the conduit to be displaceable under the influence of gas flow in the conduit;

a light source arranged to provide a uniform intensity of light over a range of displacement of the vane arrangement;

an optical encoder interposed between the light source and the vane arrangement effective over the range of displacement to encode light from the light source as a function of displacement under the influence of gas flow; and

a light detector arranged to optically communicate with the ~~encoded~~ light from the light source, following encoding by the encoder, and to provide an output signal, based thereupon, in accordance with the encoded light, related to gas flow, wherein the vane arrangement is attached to an inner wall of the conduit and forms at least one light guide including a free end and an attached end, and said encoder is interposed between each said free end and the light source so that light encoded by the encoder is optically communicated to each said light guide each by each said free end, and further wherein said light detector optically communicates with each said light guide at the attached end of the vane arrangement.

2. (Canceled)

3. (Currently Amended) The measuring device of claim ~~2~~ 1, wherein the encoder comprises a mask extending ~~of its length~~ over said range of displacement, said mask being configured to transmit a range of light intensities as a function of position along ~~it's~~ a length of the mask.

4. (Currently Amended) The measuring device of claim 3, wherein said mask is tapered ~~of its length~~.

5. (Original) The measuring device of claim 4, wherein said mask has a double taper to form an arrowhead shaped aperture.

6. (Currently Amended) The measuring device of claim ~~2~~ 1, wherein said vane arrangement has two light guides, and said encoder comprises two rows of regularly spaced discrete light sources aligned with the free end of the respective light guide, and further wherein said light detector provides two output signals, one for each respective light guide.

7. (Original) The measuring device of claim 6, wherein said discrete light sources are formed by slots made in an opaque material covering a sheet of light transmission material.

8. (Currently Amended) The measuring device of claim 1, wherein said vane arrangement has a smaller gas impinging dimension in a portion proximate the ~~attachment~~ attached end than at the free end.

9. (Currently Amended) The measuring device of claim 1, wherein the vane arrangement carries a first polarizing element, and said first polarizing element and a second, fixed polarizing element form the encoder, and further wherein said light source, said first and second polarizing elements and said light detector are in optical alignment, the planes of polarization of the respective first and second polarizing elements interacting as a function of displacement of said vane ~~element~~ arrangement to result in a range of optical transmitivities.

10. (Original) The measuring device of claim 9, wherein said first polarizing element is arcuately shaped.

11. (Currently Amended) The measuring device of claim 9, wherein said vane arrangement is formed as: (i) a pivoting shaft to which is attached said first polarizing ~~sheet~~ element, and (ii) a distally located vane element.

12. (Original) The measuring device of claim 11, wherein said first polarizing element is arcuately shaped.

13. (Original) CPAP or assisted ventilation apparatus comprising:
a blower to produce pressurized breathable gas;
a gas supply conduit to receive said breathable gas;
a device to deliver said gas, received from said conduit, to a patient's airways;
a controller having control over operation of the blower; and
a flow measuring device as claimed in claim 1, and wherein the output gas flow signal thereof is provided to the controller as a control variable therefor.

14. (Currently Amended) A measuring device for measuring gas flow through a conduit, said device comprising:

a light guide extending into the conduit from a fixed end thereof and being displaceable under the influence of gas flow in the conduit;

a light source providing a uniform intensity of light over a range of displacement of said light guide;

an optical encoder interposed between the light source and ~~the~~ a vane arrangement effective over the range of displacement to encode light from the light source as a function of displacement of the light guide under the influence of gas flow, ~~the encoded light from the light source, after encoding by the encoder,~~ being optically communicated to the light guide through ~~the~~ a free end ~~thereof of the light guide~~; and

a light detector arranged to optically communicate with the a fixed end of the light guide to receive said ~~encoded light from the light source encoded by the encoder~~ and provide an output signal ~~based thereupon~~ related to gas flow in accordance with the encoded light.

15. (Currently Amended) The measuring device of claim 14, wherein the encoder comprises a mask extending ~~of its length~~ over said range of displacement, said mask being configured to transmit a range of light intensities as a function of position along ~~it's~~ a length of the mask.

16. (Currently Amended) The measuring device of claim 15, wherein said mask is tapered ~~of its length~~.

17. (Original) The measuring device of claim 16, wherein said mask has a double taper to form an arrowhead shaped aperture.

18. (Currently Amended) A measuring device for determining gas flow through a conduit, said device comprising:

two light guides arranged side-by-side and extending into the conduit, each of said light guides including a free end and a fixed end, each said free end from the fixed ends thereof, and being displaceable under the influence of gas flow in the conduit;

a light source arranged to provide a uniform intensity of light over a range of displacement of the light guides;

an optical encoder having two parallel rows of slots aligned with the respective free ends of the light guides to encode light from the light source as a function of displacement of the light guides under influence of gas flow; and

a light detector arranged to optically communicate with the fixed ends of the light guides to receive the encoded light from the light source and provide an output signal ~~based thereupon~~ related to gas flow in accordance with the encoded light.

19. (Original) The measuring device of claim 18, wherein said rows of slots are formed by an opaque material covering a sheet of light transmission material.

20. (Currently Amended) A measuring device for measuring gas flow through a conduit, said device comprising:

a vane arrangement extending into the conduit from a fixed end thereof and being displaceable under the influence of gas flow in the conduits;

a light source arranged to provide a uniform intensity of light over a range of displacement of the vane arrangement;

a first polarizing element, carried by the vane arrangement, and a second polarizing element interposed between said first polarizing element and said light source, all in optical alignment, said first and second polarizing elements forming an optical encoder by the planes of polarization of the respective polarizing elements interacting as a function of displacement of said vane ~~element~~ arrangement to result in variable optical transmittivity; and

a light detector arranged to receive light from the ~~encoded~~ light source, following encoding by the encoder, and to provide an output signal ~~based thereupon~~ related to gas flow in accordance with the encoded light.

21. (Currently Amended) The measuring device of claim 20, wherein said vane arrangement is formed as (i) a pivoting shaft to which is attached said first polarizing ~~sheet~~ element, and (ii) a distally located vane element.

22. (Original) The measuring device of claim 21, wherein said first polarizing element is arcuately shaped.

23. (Currently Amended) CPAP or assisted ventilation apparatus comprising:
a blower to produce pressurised breathable gas;
a gas supply conduit to receive said breathable gas;
a device to deliver said gas, received from said conduit, to a patient's airways;
a controller having control over operation of the blower; and
a flow measuring device comprising:

a light guide extending into the conduit from a fixed end thereof and being displaceable under the influence of gas flow in the conduit;

a light source providing a uniform intensity of light over a range of displacement of said light guide;

an optical encoder interposed between the light source and ~~the~~ a vane arrangement effective over the range of displacement to encode the light source as a function of displacement of the light guide under the influence of gas flow, ~~the encoded light from the light source, after encoding by the encoder,~~ being optically communicated to the light guide through ~~the~~ a free end ~~thereof~~ of the light guide; and

a light detector arranged to optically communicate with the a fixed end of the light guide to receive said ~~encoded~~ light from the light source encoded by the encoder and provide an output signal ~~based thereupon~~ related to gas flow in accordance with the encoded light,

and wherein the output gas flow signal is provided to the controller as a control variable therefor.

24. (Currently Amended) CPAP or assisted ventilation apparatus comprising:
a blower to produce pressurised breathable gas;
a gas supply conduit to receive said breathable gas;
a device to deliver said gas, received from said conduit, to a patient's airways;
a controller having control over operation of the blower; and
a flow measuring device comprising:

two light guides arranged side-by-side and extending into the conduit,
each of said light guides including a free end and a fixed end, each said free
end from the fixed ends thereof, and being displaceable under the influence of
gas flow in the conduit;

a light source arranged to provide a uniform intensity of light over a
range of displacement of the light guides;

an optical encoder having two parallel rows of slots aligned with the
respective free ends of the light guides to encode light from the light source as
a function of displacement of the light guides under influence of gas flow; and

a light detector arranged to optically communicate with the fixed ends of
the light guides to receive the encoded light source and provide an output
signal ~~based thereupon~~ related to gas flow in accordance with the encoded
light;

and wherein the output gas flow signal is provided to the controller as a control
variable therefor.

25. (Currently Amended) CPAP or assisted ventilation apparatus comprising:
a blower to produce pressurised breathable gas;
a gas supply conduit to receive said breathable gas;
a device to deliver said gas, received from said conduit, to a patient's airways;
a controller having control over operation of the blower; and
a flow measuring device comprising:

a vane arrangement extending into the conduit from a fixed end thereof and being displaceable under the influence of gas flow in the conduits;

a light source arranged to provide a uniform intensity of light over a range of displacement of the vane arrangement;

a first polarizing element, carried by the vane arrangement, and a second polarizing element interposed between said first polarizing element and said light source, all in optical alignment, said first and second polarizing elements forming an optical encoder by the planes of polarization of the respective polarizing elements interacting as a function of displacement of said vane element to result in variable optical transmittivity; and

a light detector arranged to receive light from the ~~encoded~~ light source, following encoding by the encoder, and to provide an output signal ~~based thereupon~~ related to gas flow in accordance with the encoded light;

and wherein the output gas flow signal is provided to the controller as a control variable therefor.

26. through 31. (Canceled)